Continental J. Medical Research 4: 8 -12, 2010 ISSN: 2141 - 4211
 http://www.wiloludjournal.com

BILATERAL WEBBED FINGERS IN A SET OF FRATERNAL TWINS - CASE REPORT

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ABSTRACT
Syndactyly or webbing or fusion of the fingers or toes is a congenital anomaly characterized by the fusion of the digits. This may be cutaneous, due to bridging of soft tissues or osseous, due to bone fusion of varying severity. Our clients, a set of male twins presented with bilateral webbing of the ring and fifth fingers in both twins. No other abnormalities were detected on physical examination, and no similar family history is known. No probable teratogenic substances were taken during pregnancy except for the maternal ingestion of native herbal concoction which was laced with native gin. Surgical separation was done with good result.

KEYWORDS: Syndactyly, twin male boys, surgical separation.

INTRODUCTION

Syndactyly is a congenital anomaly characterized by webbing or fusion of the fingers or toes. Syndactyly of the fourth and fifth fingers has been previously reported in literature by Bell J (1931), Collette A.T. (1954) and Johnston and Kirby (1955). In their series they were able to prove a dominant genetic inheritance. To the best of our knowledge, this is the first case of a set of fraternal twins presenting with syndactyly involving the fourth and fifth finger.

Presentation

The twin babies presented in a busy family practice and general clinic in Warri, the main oil city of Delta State, Nigeria. The presenting complains was that the two last fingers of both hands of the two babies were united or webbed. There was no other problem identified.

Their mother reported that the pregnancy was uneventful and that the routine ante-natal clinic was done at another private clinic in the state. She had the routine immunization and haematinics given while pregnant and did not abuse any drugs.

Labour and eventual delivery of the twins was uneventful. Mother reported that there were two placentas at birth.

After birth, routine examination revealed that the ring and the small fingers of both hands of both twins were joined throughout their entire length. No other abnormalities were identified. The babies cried well at birth and were discharged home some days later.

Later, when age about three weeks, and baby 1 weighing 2.80 kilogram, and baby II weighing 3.0kilogram, their parents brought them to the reviewing clinic for review and for any further actions.

Physical examination revealed bilateral syndactyly occurring in the two babies (figure 1). No other congenital abnormalities were detected. Systemic examinations of the system of both babies were essentially normal. The problem and possible line of management were explained to their parents. They were made to understand that surgery was the main-line of management and they consented.

The plan subsequently was surgical separation of the webbed finger and the procedure and expected results were explained to the parents. They agreed and the babies were booked for surgery while routine investigations were done.

Findings at surgery revealed that the bones of the joined fingers were not joined but were covered with skin. The tip of the terminal phalanx however was united, with the nail beds united but with a groove delineating the two finger-nails.

Surgical separation was successful, and the united terminal phalangeal bones were divided, thereby separating the fingers (figure 2). The procedure was well tolerated and adequate post-operative care was given.

Both babies were followed up on a daily basis while adequate care of the wound was been followed up. They were both discharged home well.

DISCUSSION

Syndactyly is a congenital anomaly characterized by the fusion of the fingers or toes. It varies in degree of severity from incomplete webbing of the skin of two digits to complete union of digits and fusion of the bones and nails. The human development begins with the formation of the gametes and includes five sequential processes. These are fertilization, cleavage, implantation, gastrulation and organogenesis. Organogenesis is the process by which individual organ arises. The major landmark of organogenesis includes information of the neural plate and it's folding into a neural fold, and also the arrangement of the derivatives of the three germ layers into specialized structures such as limbs, eyes and ear (Bernfeild, M. H. 1999).

Fig 1: PICTURES SHOWING THE WEBBED FINGERS OF THE TWINS

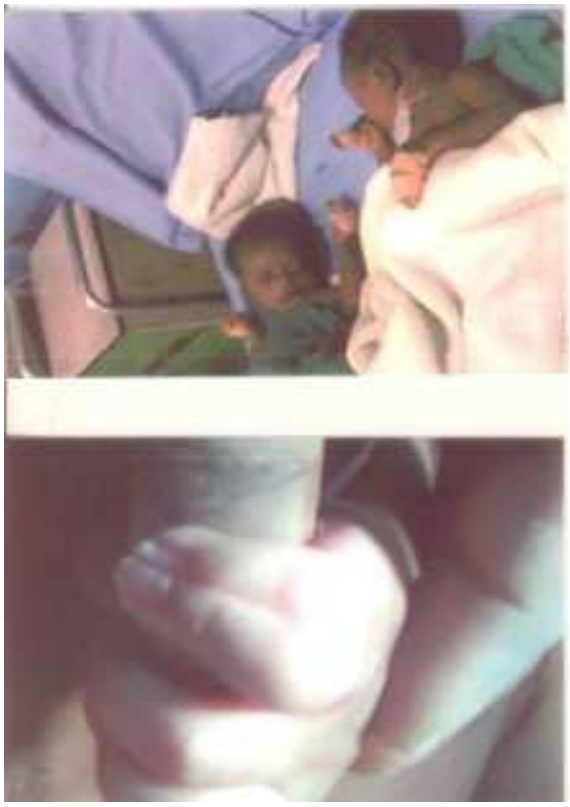

Fig 2: PICTURE OF BABIES AFTER OPERATIONS

During organogenesis, the cell in the embryo undergoes differentiation and morphogenesis to form specific tissues and organs. This process is a very delicate time-controlled process and several factors are known to disrupt it, thereby giving rise to congenital malformation.

A major malformation is usually defined as a structural abnormality that has surgical, medical or cosmetic importance. Having a single major malformation is much more common than having multiple malformations (Holmes, L. B., 1999).

Minor malformations, which are more common than major malformations, are defined as having no surgical or cosmetic significance and occur in fewer than 4% (four percent) of all newborns of the same race and gender (Holmes, L. B., 1999).

The most common malformations are attributed to multifactorial inheritance, which include interplay between mutant genes and environmental factors. Huge efforts are made to identify the underlying genetic and environmental factor.

New insights have been gained into the pathogenesis of various structural defects. The potential prenatal effects of various drugs, chemicals, and environmental agents are being better appreciated, and the number of defects in which prenatal defection is possible has increased (Jones, K. L,, 1996).

The teratogenic exposure during pregnancy that cause malformation include maternal conditions or diseases, maternal infection, drugs taken during pregnancy and exposure to heavy metals. The first trimester of the pregnancy is the period where exposure most likely to produce malformation (Holmes, L. B., 1999).

Exposures in the second and third trimester are also of concern. In general, the higher the exposure, the greater the risk of damages. Some major and minor abnormalities are seen in infants exposed to drugs such as thalidomide, tetracycline, diethylstilbesterol, and phenytoin and in maternal conditions such as alcoholism.

The mother of the babies is 37 years old, while their father who does not know his age agrees that he is older than his wife. Both of them are local farmers. They have three children before this present set of twins. The siblings of the twins are normal with no history of webbing noted.

They deny the use of chemicals on their farms, or at home to repel insects. The mother of the babies attended regular ante-natal clinic while pregnant but agreed to drinking native herbal concoction laced with native gin which was used to treat maternal fever while she was about seven month pregnant. She denied the use of any other medicine other than the one she was given at the clinic that she attended.

Also, the mother of the babies reported that the twins had two placentas at birth and were therefore not identical twins. This implies that the cause of the malformation was not genetic but due to chemical exposure, likely the ingested herbal concoction.

Syndactyly or webbed fingers is one of the most common congenital hand abnormalities, occurring in one out of every 2,000 – 3,000 live births (HHCWF; PPS)

Webbed fingers are usually obvious at birth, diagnosis usually done early at the time of examination by the attending midwives.

Syndactyly is seen most commonly between the ring fingers and middle fingers, but can also be seen occurring at the other fingers (HHCWF). In about 50% of cases, both hands are involved, just as in our clients (PPS). Syndactyly may occur alone, or it may be the external manifestation of a syndrome such as Apert's syndrome (PPS).

Syndactyly tends to have a family history, as approximately about 40% of cases may have a family history. If syndactyly occurs alone, it is then inherited as an autosomal dominant condition. The condition is seen more in Caucasians than in other races of the world. It affects boys twice as often as girls (PPS).

There are many different forms of syndactyly:
1. When the affected fingers are completely joined together, it is known as "complete syndactyly".
2. When the joining involves only parts of the sides of the fingers, it is called "incomplete" syndactyly.
3. If the joining between the fingers involves just the skin and flesh, it is described as "simple".
4. If the bones are joined together, it is called "complex syndactyly" (PPS, ETHS).

Additionally, when adjacent fingers are completely joined and have bones fused together, it is described as "complete complex" syndactyly (ETHS).

The main issue in syndactyly is the function of the hand and digits. Syndactyly causes limitations of functions, because the involved digits cannot move completely independently. The main decision is to decide on whether or not to do anything for the problem. Every patient is treated individually, but generally, syndactyly is treated surgically with an operation that separates the digits. The surgery is advised if the webbing causes problem with appearance or functions. Surgery for syndactyly is best done in first few years of life so that the looks and feel and function of the corrected hand is most natural for the child (PPS, ETHS).

The surgery usually involves general aneasthesia, with all its concomitant risks such as breathing problems, reactions to medications, bleeding from the operation sites and even infections of the cut surfaces (HIL).

Our clients were a set of male baby boys each presenting with fused ring and small (5^{th}) fingers of both hands. No other physical abnormalities were detected. There was no family history given.

The webbed fingers had the terminal phalanged bones fused together with the nail beds joined together. The nail bed of the ring finger of both boys was better developed than that of the small (5^{th}) finger. Separation was successfully done and both boys were discharged home well.

We are limited here by the fact that we could not do genetic mapping to determine whether there was any genetic abnormality involved. We also do not know whether the native herbal concoction that the pregnant mother took had any effect on the babies. But then, this activity was at the seventh month of pregnancy when organogenesis was already complete.

We suggest therefore that the government should provide facilities for genetic matching to enable proper screening of possible genetically inherited disorders.

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Received for Publication: 07/03/2010
Accepted for Publication: 24/05/2010

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